What is claimed is:

1. A linear tuning varactor circuit, comprising:

a first single-end varactor circuit, having a tuning terminal, adapted to receive a tuning voltage for tuning a capacitanceof the varactor circuit;

a second single-end varactor circuit, having a reference voltage terminal adapted to receive a fixed reference voltage as a reference level; and

a voltage divider, having a first terminal, a voltage dividing terminal and a second terminal, the first terminal coupled to the tuning terminal of the first single-end varactor circuit, the voltage dividing terminal coupled to the tuning terminal of the second single-end varactor circuit, the second terminal coupled to the reference voltage terminal of the second single-end varactor circuit, wherein the first single-end varactor circuit is coupled to the second single-end varactor circuit in series, the voltage dividing terminal of the voltage divider is coupled to a node of the first single-end varactor circuit and the second single-end varactor circuit, and the voltage dividing terminal has a divided voltage, which results from dividing a voltage difference between the tuning voltage and the reference voltage by the voltage divider with a pre-set voltage dividing ratio.

2. The linear tuning varactor circuit of claim 1, wherein the first single-end varactor circuit further comprises a reference voltage terminal, the second single-end varactor circuit further comprises a tuning terminal and a connecting terminal, the reference voltage terminal of the first single-end varactor circuit is coupled to the connecting terminal of the second single-end varactor circuit, and the tuning terminal of

the second single-end varactor circuit is coupled to the voltage dividing terminal of the voltage divider.

3. The linear tuning varactor circuit of claim 1, wherein the voltage divider further comprises a first resistor and a second resistor coupled to each other in series, a terminal of the first resistor is coupled to the first terminal of the voltage divider, a terminal of the second resistor is coupled to the second terminal of the voltage divider, and a node of the first and the second resistors is to the voltage dividing terminal.

4. A linear tuning varactor circuit, comprising:

a plurality of single-end varactor circuits, each having a tuning terminal and a reference voltage terminal, the single-end varactor circuits coupled in series, a tuning terminal of a first single-end varactor circuit adapted to receive a tuning voltage for tuning a capacitanceof the varactor circuit, a reference voltage terminal of a last single-end varactor circuit adapted to receive a reference voltage as a reference level; and

a voltage divider, having a first terminal, a plurality of voltage dividing terminals and a second terminal, the first terminal coupled to the tuning terminal of the first single-end varactor circuit, the second terminal coupled to the reference voltage terminal of the last single-end varactor circuit, wherein the voltage dividing terminals of the voltage divider are coupled to nodes of the single-end varactor circuits, and each of the voltage dividing terminals has a divided voltage, which results from dividing a voltage difference between the tuning voltage and the reference voltage by the voltage divider with a pre-set voltage dividing ratio.

5. The linear tuning varactor circuit of claim 4, wherein the single-end varactor circuits further comprise connecting terminals, a connecting terminal of a second single-end varactor circuit is coupled to the reference voltage terminal of the first single-end varactor circuit, a reference voltage terminal of the second single-end varactor circuit is coupled to a connecting terminal of a third single-end varactor circuit, and the others follow a connection similar thereto.

6. The linear tuning varactor circuit of claim 5, wherein, except for the first single-end varactor circuit, the tuning terminals of the single-end varactor circuits are coupled to the voltage dividing terminals of the voltage divider.

7. The linear tuning varactor circuit of claim 4, wherein the voltage divider further comprises a plurality of resistors coupled in series, a terminal of a first resistors is coupled to the first terminal, a terminal of a last resistor is coupled to the second terminal, and nodes of resistors are to the voltage dividing terminals.

8. A linear tuning varactor circuit, comprising:

a first set of single-end varactor circuits, comprising a plurality of single-end varactor circuits, each having a tuning terminal and a corresponding tuning terminal, the single-end varactor circuits coupled in series, a tuning terminal of a first single-end varactor circuit adapted to receive a tuning voltage, a corresponding tuning terminal of a last varactor circuit adapted to receive a corresponding tuning voltage for determining a capacitance thereof;

a second set of single-end varactor circuits, comprising a plurality of single-end varactor circuits, each having a tuning terminal and a corresponding tuning terminal, the second set of single-end varactor circuits having varactor circuits equal to those of the first set of single-end varactor circuits, the varactor circuits coupled in series, the first set of single-end varactor circuits coupled to the second set of single-end varactor circuits in series;

a first voltage divider, having a first terminal, a plurality of voltage dividing terminals and a second terminal, the first terminal coupled to the tuning terminal of the first single-end varactor circuit of the first set of single-end varactor circuits, the second terminal coupled to the corresponding terminal of the last single-end varactor circuit of the first set of single-end varactor circuits, wherein the voltage dividing terminals of the voltage divider are coupled to nodes of the single-end varactor circuits of the first set of single-end varactor circuits, and each of the voltage dividing terminals has a divided voltage, which results from dividing a voltage difference between the tuning voltage and the reference voltage by the first voltage divider with a pre-set voltage dividing ratio; and

a second voltage divider, having a first terminal, a plurality of voltage dividing terminals and a second terminal, the first terminal coupled to the tuning terminal of the first single-end varactor circuit of the second set of single-end varactor circuits, the second terminal coupled to the corresponding terminal of the last single-end varactor circuit of the second set of single-end varactor circuits, wherein the voltage dividing terminals of the voltage divider are coupled to nodes of the single-end varactor circuits of the second set of single-end varactor circuits, and each of the voltage dividing terminals has a divided voltage, which results from dividing a voltage difference

between the tuning voltage and the reference voltage by the second voltage divider with the pre-set voltage dividing ratio.

9. The linear tuning varactor circuit of claim 8, wherein the single-end varactor circuits of the first set of single-end varactor circuits further comprise connecting terminals, a connecting terminal of a second single-end varactor circuit is coupled to the corresponding tuning terminal of the first single-end varactor circuit, a corresponding tuning terminal of the second single-end varactor circuit is coupled to a connecting terminal of a third single-end varactor circuit, and the others follow a connection similar thereto.

10. The linear tuning varactor circuit of claim 9, wherein, the tuning terminals of the single-end varactor circuits of the first set of single-end varactor circuits are coupled to the voltage dividing terminals of the first voltage divider.

11. The linear tuning varactor circuit of claim 8, wherein the single-end varactor circuits of the second set of single-end varactor circuits further comprise connecting terminals, the tuning terminal of the first single-end varactor circuit thereof is coupled to the tuning terminal of the first single-end varactor circuit the first set of single-end varactor circuits, the corresponding tuning terminal of the last single- varactor circuit thereof is coupled to the corresponding tuning terminal of the last single-end varactor circuit the first set of single-end varactor circuits, a connecting terminal of a second single-end varactor circuit is coupled to the corresponding tuning terminal of the first single-end varactor circuit, a corresponding tuning of the second single-end varactor

circuit is coupled to a connecting terminal of a third single-end varactor circuit, and connections of others aresimilar thereto.

12. The linear tuning varactor circuit of claim 11, wherein, the tuning terminals of the single-end varactor circuits of the second set of single-end varactor circuits are coupled to the voltage dividing terminals of the second voltage divider.

13. The linear tuning varactor circuit of claim 8, wherein the first voltage divider further comprises a plurality of resistors coupled in series, a terminal of a first resistor of the resistors is coupled to the first terminal of the first voltage divider, a terminal of a last resistor is coupled to the second terminal of the first voltage divider, and nodes of resistors are the voltage dividing terminals of the first voltage divider.

14. The linear tuning varactor circuit of claim 8, wherein the second voltage divider further comprises a plurality of resistors coupled in series, a terminal of a first resistor of the resistors is coupled to the first terminal of the second voltage divider, a terminal of a last resistor is coupled to the second terminal of the second voltage divider, and nodes of resistors are the voltage dividing terminals of the second voltage divider.

15. A method of tuning a linear tuning varactor circuit, adapted to a linear tuning varactor circuit, the linear tuning varactor circuit comprising a plurality of single-end varactor circuits and a voltage divider, the voltage divider comprising a plurality of resistors , the number of the single-end varactor circuits corresponding to a level of the

linear tuning varactor circuit, a variation of a capacitance thereof determined by a tuning voltage and a reference voltage, the method comprising:

tuning the capacitance of the linear tuning varactor circuit;

determining whether or not a tuning range of the capacitance thereof is a linear region; and

when the tuning range is not a linear region, narrowing the tuning range and determining whether or not a narrowed region is a linear region.

16. The method of tuning a linear tuning varactor circuit of claim 15, wherein when resistances of the resistor are same, the narrowing step comprises:

increasing the level of the linear tuning varactor circuit;

deducting the reference voltage from the tuning voltage to get a tuning voltage range; and

dividing the tuning voltage range by the level of the linear tuning varactor circuit for generating a narrowed tuning range.

17. The method of tuning a linear tuning varactor circuit of claim 15, wherein the step of determining whether the tuning range of the capacitance thereof is a linear region comprises:

inputting the tuning voltages;

determining whether or not a different portion of the tuning voltages correspond to the same capacitances of the linear tuning varactor circuit;

when the different portion of the tuning voltages are not higher than the pre-set percentage, the tuning range of the capacitance of the linear varactor is a linear region.; and

when the different portion portion of the tuning voltages are higher than a pre-set percentage. the tuning range of the capacitance of the linear varactor is not a linear region;

18. A method of tuning a linear tuning varactor circuit, adapted to a linear tuning varactor circuit, the linear tuning varactor circuit comprising a first set of single-end varactor circuits, a second set single-end varactor circuits, a first voltage divider and a second voltage divider, the first and the second sets of single-end varactor circuits having a plurality of single-end varactor circuits, the first and the second voltage dividers comprising a same number resistors, the number of the resistors corresponding to a level of the linear tuning varactor circuit, a variation of a capacitance thereof determined by a tuning voltage and a reference voltage, the method comprising:

tuning the capacitance of the linear tuning varactor circuit;

determining whether or not a tuning range of the capacitance thereof is a linear region; and

when the tuning range is not a linear region, narrowing the tuning range and determining whether a narrowed region is a linear region.

19. The method of tuning a linear tuning varactor circuit of claim 18, wherein when resistances of the resistor are same, the narrowing step comprises:

increasing the level of the linear tuning varactor circuit;

deducting the corresponding tuning voltage from the tuning voltage to get a tuning voltage range; and

dividing the tuning voltage range by the level of the linear tuning varactor circuit for generating a narrowed tuning range.

20. The method of tuning a linear tuning varactor circuit of claim 18, wherein the step of determining whether the tuning range of the capacitance thereof is a linear region comprises:

inputting the tuning voltages;

determining whether a different portion of the tuning voltages correspond to the same capacitances of the linear tuning varactor circuit;

when the different portion of the tuning voltages are higher than a pre-set percentage the tuning range of the capacitance of the linear varactor circuit is not a linear region; and

when the different portion of the tuning voltages are not higher than the pre-set percentage, the tuning range of the capacitance of the linear varactor circuit is a linear region.